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 Applicant: Michael Peter CORBY; Jeffrey DENTON
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APPLICATION ELEMENTS

1. ☒ Fee Calculation (Box 13) and Authorization (Triplicate copies of this form are enclosed)
2. ☒ Specification and Claims (26) Total Pages
3. ☐ Formal Drawings () Total Sheets
4. ☒ Unexecuted Declaration
5. ☐ Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
 - a. ☐ Computer Readable Copy
 - b. ☐ Paper copy (identical to computer copy)
 - c. ☐ Statement verifying identify of above copies.

ACCOMPANYING APPLICATION PARTS

6. ☐ Information Disclosure Statement (IDS)/PTO-1449
7. ☐ Copies of IDS citations
8. ☐ Preliminary Amendment
9. ☒ Two (2) Return Receipt Postcards
10. ☐ Certified Copy of Priority Document
11. ☒ The benefit under 35 U.S.C. § 119 is claimed of the filing of European Application No. 99305796.7, filed July 22, 2000.
12. ☐ Other:
13. ☒ The FILING FEE (including any claims introduced or cancelled by Preliminary Amendment) is calculated below:

CLAIMS				
FOR	NUMBER FILED		NUMBER EXTRA	RATE
				BASIC FEE \$690.00
Total Claims	16- 20			X \$ 18.00
Independent Claims	2 - 3			X \$ 78.00
Multiple Claims	<u>Yes</u>	<u>No</u>		X \$260.00
TOTAL FILING FEE . . .				\$690.00

Lubricant composition**Field of the invention**

The present invention relates to lubricant solutions
5 suitable for producing a lubricant film. More particularly,
the invention relates to such lubricant solutions and their
use as a lubricant for the lubrication of conveyor belts.
These conveyor belts are generally used for the transport
of glass, plastic or cardboard containers, particularly
10 plastic containers of polyethylene terephthalate (PET) or
polycarbonate, and metal cans.

Background of the invention

Known conveyor belt lubricants are employed in applications
15 in which good gliding contact between solid surfaces, for
instance glass and metal, or plastic and metal must be
ensured.

These applications include bottle filling and conveying
plants, where the lubricants are applied to the conveyor
20 belts to ensure the trouble-free conveyance of bottles on
the belt. In many known systems, a soap such as potash-
based soft soap is used as the lubricant.

As a substitute for the soap-based lubricants, a variety of
synthetic conveyor belt lubricants including certain amine
25 compounds are being used. These synthetic lubricants have
been described in, for example, EP-A-372,628, US-A-
5,073,280 and EP-A-767,825.

These conveyor belt lubricants are generally supplied as
30 concentrates and use concentrations of such concentrates

are usually prepared by applying typical dilution rates of 0.2-1.0% by weight concentrate in water depending on the friction requirement and the water type.

Such aqueous belt lubricants having a use concentration of 5 the active lubricating ingredients of significantly less than 1% by weight have been satisfactorily applied for many years.

On the other hand, the application of these aqueous lubricants has also resulted in high water usage rates and 10 relatively high effluent costs for the user.

Furthermore, when used as conventionally intended these aqueous lubricants flow off the conveyor track surface treated therewith, resulting in a waste of chemical and water, and causing a slippery floor surface which may 15 constitute a hazard to operators working in the immediate environment.

Lubrication in a wide range of lubricating applications involving moving metal parts including metal shaping 20 operations, such as drilling, cutting and drawing, by means of the deposition of a lubricant film has been known for many years. For instance, US-A-5,549,836 discloses a mineral oil-free aqueous lubricant composition useful for producing a lubricant film and suitable for use in the 25 above-mentioned types of lubricating applications involving moving metal parts.

We have now surprisingly found that certain specific liquid formulations suitable for producing a "dry" lubricant film, 30 can be advantageously used as a conveyor belt lubricant,

whereby the above-described problems observed when using the aqueous conveyor belt lubricants of the prior art are effectively overcome.

In particular, we have found that such liquid formulations
5 have both good lubricating properties and adequate cleaning characteristics.

In this connection, a "dry" lubricant film is defined as a lubricant film which remains on the surface onto which it is applied as a liquid, and which, consequently does not
10 flow off, or is easily removable from, said surface.

Definition of the invention

Accordingly, the present invention provides the use of a liquid composition suitable for producing a "dry" lubricant
15 film on a surface by discontinuous application of said composition, for lubricating conveyor belts, said liquid composition comprising up to 95% by weight of an aqueous phase and also being suitable for continuous application to a conveyor belt surface, with or without
20 further dilution with water, to remove incidental spillages of extraneous material from the conveyor belt surface without loss of the required lubricity.

The required lubricity is defined to be the lubricity which ensures trouble-free operation of the conveyor belt
25 concerned.

In another aspect, the present invention provides a method of lubricating a conveyor belt, comprising the steps of
(i) formulating a liquid composition suitable for
30 producing a "dry" lubricant film on a surface by

- discontinuous application of said composition, said composition comprising up to 95% by weight of an aqueous phase and also being suitable for continuous application to a conveyor belt surface, with or without further dilution with water, to remove incidental spillages of extraneous material from the conveyor belt surface without loss of the required lubricity, and
- (ii) applying said liquid composition to the conveyor belt as a thin "dry" lubricant film.

Detailed description of the invention

- The liquid composition of the present invention was found to be very suitable for lubricating conveyor belts.
- For establishing a "dry" lubricant film on the conveyor belt, only a minor amount of said liquid composition is needed. Typically an amount of 2-20 ml of the liquid composition is sufficient when applied every 20 minutes and fed to a normal size single conveyor belt. Said liquid composition is applied to the conveyor belt in undiluted form, either manually or by means of an automatic applicator.

In contrast to the aqueous conveyor belt lubricants of the prior art, the liquid composition of the present invention does not need to be fed continuously to the conveyor belt treated therewith.

In this connection, the friction coefficient (μ) being a measure for the friction between the containers (e.g.

bottles, carton boxes, metal cans) transported by the conveyor belt and the belt surface, is of importance.

It has been observed that the friction coefficient obtained after ceasing the application of the liquid material of the invention to the surface of the belt, is sufficiently low for a much longer time period than when using the aqueous conveyor belt lubricants of the prior art.

In other words, the durability -being a measure of the time period during which the liquid of the invention adequately lubricates the conveyor belt after cessation of the application thereof to said belt- is much better for the liquid composition of the invention.

When spillages of the contents of the containers transported by the treated conveyor belt would occur, said conveyor belt can be adequately cleaned by taking one or more of the following actions:

- raising the feed rate of the liquid of the invention;
- adding water to said liquid.

20

The liquid composition

The liquid composition of the invention may be effectively water-based. In that case, it comprises an aqueous phase which suitably constitutes about 10-95% by weight, preferably 50-90% by weight, of the overall composition. Alternatively, the liquid of the invention may be substantially non-aqueous, and comprise less than 10% by weight of water.

If said liquid is water-based, it preferably contains from 1-15% by weight of a volatile water-miscible solvent such as methanol, ethanol and isopropanol, as an aid in assisting the evaporation of the water from the lubricant film deposited on the conveyor belt when using the liquid. When present, the solvent forms part of the aqueous phase.

If the liquid of the invention is water-based, it may be desirable to incorporate an effective amount of an anti-rust additive.

In order to obtain adequate disinfection in case of spillages, it may also be desirable to incorporate a biocide.

15 **Silicone oil**

The liquid composition of the invention may desirably comprise a silicone oil and an aqueous phase. This type of liquid composition is effectively a silicone emulsion in water.

Favourable results in terms of durability were obtained when this liquid composition was applied on conveyor belts used for transporting containers selected from polyethylene terephthalate bottles, polycarbonate bottles, laminated cardboard containers and metal cans made from steel and aluminium. Furthermore, for obtaining most favourable results with this type of liquid, said conveyor belts are preferably made of plastic, polyacetal or polyamide.

This liquid composition of the invention preferably comprises:

10-95% by weight of the aqueous phase; and
1-55% by weight of the silicone oil.

More preferably, the concentration of the silicone oil in
this liquid composition is 10-40% by weight.

5

Suitable silicone oils are polydimethyl siloxane fluids
having viscosities of from 1000 to 30.000 centistokes.
The silicone oil which is homogeneously dispersed in the
aqueous phase, is particularly suitable for assisting

10 penetration of the liquid composition of the invention into
difficult to reach areas when applied to the conveyor belt.

Vegetable oil/mineral oil

Alternatively, the liquid composition of the invention may
15 desirably comprise an oil selected from vegetable oils,
mineral oils and mixtures thereof, and, optionally, water.

This type of liquid composition preferably comprises:
10-90% by weight of the oil, and 10-50% by weight of water.

This preferred type of liquid which is effectively an

20 emulsion of the water in the oil, was found to be very
suitable for lubricating conveyor belts used for
transporting any type of containers. Best results were
obtained when said belts were used for transporting
containers selected from glass bottles, steel and aluminium
25 cans, cardboard containers, plastic bottles and plastic
crates. Said conveyor belts may be made of any type of
material.

Desirably, the oil is homogeneously dispersed in the
aqueous phase.

30

Most preferred for use in the liquid of the invention are vegetable oils such as rapeseed oil, soya oil, palm oil, olive oil, sunflower oil and mixtures thereof. Synthetic oils such as glyceryl trioleate are also preferred as a
5 constituent of said liquid.

Vegetable oils are particularly desirable in view of their environmental acceptability.

Polyhydric alcohol

10 Particularly when intended for use on conveyor belts made of plastic material such as those made of polyacetal and polyamide, the liquid of the invention may suitably comprise a polyhydric alcohol. This type of liquid was found to show good lubricating performance when applied on
15 this type of belt which may be used for transporting any type of container. However, this liquid may also be used on steel tracks with certain types of containers.

This liquid of the invention may be either substantially non-aqueous or contain 10-80% by weight of water.

20 It preferably contains the polyhydric alcohol in an amount of at least 20% by weight.

Suitable polyhydric alcohol are glycerine (i.e. propane 1,2,3-triol), propylene glycol and ethylene glycol.

25 PTFE

In various embodiments of the invention in which the liquid composition includes an aqueous phase, it is particularly preferred that said liquid composition includes polytetrafluoroethylene (PTFE) resin, in the form of an

ultrafine particle dispersion of the resin incorporated in the aqueous phase.

Particularly, when said liquid composition comprises a vegetable and/or mineral oil, or a polyhydric alcohol (see 5 above), it is preferred to add said PTFE resin to this liquid composition. In such cases, the PTFE considerably improves the lubricity and wear properties of the "dry" lubricant film produced by the liquid of the invention, when in use.

10 Preferably, the PTFE will constitute 2-25% by weight, more preferably 2-10% by weight, of the liquid composition.

Surfactant

A wide variety of surfactants selected from anionic, 15 nonionic, cationic and amphoteric surfactants, may be effectively used in the lubricant composition of the present invention.

It is believed that these surfactants improve the stability of the liquid of the invention particularly when it 20 contains an aqueous phase. These surfactants may also improve the chemical compatibility of the liquid of the invention with the construction material of certain containers transported by the belts treated with said liquid. In particular, it was found that anionic 25 surfactants may improve the PET compatibility of a liquid composition containing a polyhydric alcohol such as glycerine.

The concentration of the surfactant material in the liquid of the invention is preferably in the range of 0.1-10% by weight, more preferably 0.2-6% by weight.

5 Further information on this surfactant material can be found in "Surface Active Agents", Vol.I, by Schwartz & Perry, Interscience 1949, and "Surface Active Agents", Vol. II, by Schwartz, Perry & Berch (Interscience 1959).

10 A particularly suitable type of surfactant material is nonionic surfactant. Nonionic surfactants are well-known in the art. They normally consist of a water-solubilising polyalkoxyene or a mono- or di-alkanolamide group in chemical combination with an organic hydrophobic group
15 derived, for example, from alkylphenols in which the alkyl group contains from about 6 to about 12 carbon atoms, dialkyl phenols in which each alkyl group contains from 6 to 12 carbon atoms, primary, secondary and tertiary aliphatic alcohols (or alkyl-capped derivatives thereof),
20 preferably having from 8 to 20 carbon atoms, monocarboxylic acids having from 10 to 24 carbon atoms in the alkyl group and polyoxy propylenes. Also common are fatty acid mono- and dialkanolamides in which the alkyl group of the fatty acid radical contains from 10 to about 20 carbon atoms and
25 the alkoxy group having from 1 to 3 carbon atoms. In any of the mono- and di- alkanolamide derivatives, optionally there may be a polyoxyalkylene moiety joining the latter groups and the hydrophobic part of the molecule.

In all polyalkoxyene containing surfactants, the
30 polyalkoxyene moiety preferably consists of from 2 to 20

groups of ethylene oxide or ethylene oxide and propylene oxide. Among the latter class, particularly preferred are those ethoxylated nonionics which are the condensation products of fatty alcohols with from 9 to 15 carbon atoms
5 condensed with from 3 to 11 moles of ethylene oxide.

Examples of these are the condensation products of C11-C13 alcohols with (say) 3 to 7 moles of ethylene oxide.

Another class of suitable nonionics include the alkyl polysaccharides (polyglycosides/oligosaccharides), such as
10 described in US-A-3,640,998; US-A-3,346,558 and US-A-4,223,129.

Examples of anionic surfactants suitable to be included in the lubricant composition of the present invention, are
15 alkali metal, alkaline earth metal, or ammonium salts of alkylbenzene sulphonates having from 10 to 18 carbon atoms in the alkyl group, alkyl and alkylether sulphates having from 10 to 24 carbon atoms in the alkyl group, the alkylether sulphates having from 1 to 5 ethylene oxide
20 groups, and olefin sulphonates prepared by sulphonation of C10-C24 alpha-olefins and subsequent neutralisation and hydrolysis of the sulphonation reaction product.

Use

25 Dispensing equipment developed for dosing the liquid composition of the invention has been designed to apply the liquid directly to the surface of the conveyor belt. Since relatively expensive neat product is applied, this equipment has been developed such that any spillage of
30 liquid material (e.g. by flowing under gravity away from

the treated surface or dripping down onto the floor)) is avoided so as to minimise wastage of said liquid.

Various types of applicator have been developed for feeding
5 the liquid composition onto the conveyor belt treated therewith.

If the liquid is a stable low viscosity material -such as an aqueous silicone oil containing product- then it can be accurately dosed by a metered diaphragm pump.

10 Such stable low-viscous liquids of the invention can be adequately dispensed using a brush applicator, including a brush that has internal channels through which liquid solution can be pumped into the bristles thereof. When in use, the motion of the conveyor belt spreads the lubricant
15 over the surface thereof. This dispensing method was found to be accurate and effective , especially when used for dosing low viscous material onto single conveyor belts.

Particularly if the liquid of the invention contains PTFE,
20 it is a viscous product which usually requires some degree of agitation to help and keep the PTFE particles in suspension. As a consequence, rather special measures are needed to be taken in order to adequately dispense said liquid at the point of use.

25

So as to achieve good dispensing performance if the liquid of the invention is viscous, it was found that so-called "flicker" non-contact applicators can be suitably used. These applicators are also suitable for use on multiple
30 conveyor belts.

The "flicker" unit contains a motor-driven rotating tubular brush, which picks up liquid from a sump via transfer rollers. A steel plate mounted against the brush flicks the
5 bristles as the brush rotates, to generate a mist of droplets of liquid material directed on to the surface of the conveyor belt so as to coat the belt.

As a result, an even coverage of the conveyor belt is
10 obtained, which is not affected by variation of the lubricant viscosity.

In contrast to conventional dilute lubricants of the prior art, the lubricant of the invention is usually dosed
15 sparingly with long intervals between doses.

For instance, the "flicker" applicator described above dispenses about 0.1 grams of lubricant per second .

Running this unit for 5 seconds every 10 minutes was found to be sufficient to keep a 640 bottles per minute conveyor
20 belt line in operation without any problems.

When using brush applicators, a higher volume of lubricant is generally needed than with "flicker" units, so as to ensure smooth operation of the conveyor belt. On the other
25 hand, since the brush also acts as a reservoir of the liquid, longer dosing intervals are possible between dosings of liquid product to the brush applicator.

Optional ingredients

Further optional ingredients of the lubricant composition of the present invention include water softeners such as ethylenediamine tetraacetic acid (EDTA) and nitrilo-
5 triacetic acid (NTA) , dyes, odorants, such as lemon oil and the like, antifreeze additives to improve storability under freezing conditions, preservatives such as formaldehyde to inhibit mould growth, and buffers to optimize the pH to a value in the range of 3-10, preferably
10 4-9.

The present invention will now be further illustrated by the following non-limiting examples.

Example 1,2, 3, A and B

Three liquid compositions according to the invention having the following compositions were prepared by thoroughly mixing its ingredients:

5

Example 1	% by weight
water	84.2
Dow Corning 346	15.0
Acetic acid (80%)	0.6
10 Formaldehyde solution (40%)	0.2

Example 2.....% by weight

Sunflower oil	55.0
Water	40.0
15 PTFE-powder	4.8
Alkylamine	0.2

Example 3.....% by weight

Glycerine	88.0
20 Dowfax 3B2	2.0
PTFE-dispersion TE 3667N	10.0

wherein: Dow Corning 346 - Silicone oil emulsion

Dowfax 3B2 - anionic surfactant

25 PTFE-dispersion TE 3667N - 60% PTFE in 40% liquid,
ex Univar Dupont.

The performance, particularly the durability, of these liquids were tested by applying them on to a single conveyor
30 belt, using a brush applicator for the liquid of example 1

respectively a "flicker" applicator for the other two liquids .

The conveyor belt used in the test was made of polyacetal material and transported PET bottles. The liquids were fed to
5 the conveyor belt, in an amount of 10 ml.

In order to test the durability of the tested liquids of the invention, several measurements of the friction coefficient (μ) were performed using a strain gauge meter. (Correx-type)
10 These measurements were carried out at the time of applying the liquids, and subsequently 10 minutes later, 20 minutes later and 30 minutes later.

The measurements of μ were carried out by holding a bottle stationary against the motion of the conveyor belt using the
15 strain gauge meter. The friction coefficient (μ) is defined as the force by the containers held against the movement of the conveyor belt divided by the weight of the containers.

For reasons of comparison, the durability of two aqueous
20 lubricants of the prior art was also tested, using the same conveyor belt configuration.

The composition of these known aqueous lubricants is shown below:

25	Example A	(%wt)
	Water	85.5
	Carboxylated alkyl ethoxylate	5.0
	Alkyl ethoxylate	3.0
	Acetic acid glacial	1.5
30	Alkyl diamine	5.0

Example B	(%wt)
Water	67.8
Potassium hydroxide (50%)	6.9
EDTA acid	1.3
5 Fatty acid	14.0
Alkane sulphonate	7.0
Preservative	3.0

These known aqueous lubricants were diluted with water to
 10 obtain 0.5%wt use solutions thereof, and these use solutions
 were applied to the conveyor belt in an amount of 100 ml.

The results of the durability tests for both the above
 three liquids of the invention (Examples 1,2 and 3) and the
 15 aqueous lubricants of the prior art (Examples A and B) are
 shown in the following table:

		Friction coefficient (μ)			
		(on polyacetal belt transporting PET-bottles)			
20	Time (min.) after				
	applying liquid/lubr.	0	10	20	30
	Example 1	0.10	0.115	0.115	0.115
	Example 2	0.07	0.075	0.084	0.085
	Example 3	0.07	0.07	0.07	0.08
25	Example A	0.14	after 5 minutes=		
	Example B	0.13	0.13	after 11 minutes=>0.2	

It can be seen that the friction coefficients obtained
 with the liquid compositions of the invention remain below
 30 0.12 during 30 minutes, which is quite adequate for good

operation of the conveyor belt. On the other hand, when applying the aqueous lubricants of the prior art it was observed that the measured friction coefficients increased rapidly -i.e. after 5 minutes respectively 11 minutes- to 5 unacceptably high values of more than 0.2.

It can be concluded that the durability of the tested liquids of the invention is much better when applied on a conveyor belt made of polyacetal and transporting PET-bottles.

10

In addition the durability of the liquid composition of Example 2 was tested when applied on a single conveyor belt made of steel material and transporting glass bottles. The same testing method was used as for the tests on the 15 polyacetal conveyor belt transporting PET-bottles.

Furthermore, the same aqueous lubricants of the prior art were used for the comparative tests.

The following results were obtained:

20

Friction Coefficient (μ)

(on a steel belt transporting glass bottles)

Time (min.) after

Applying liquid/lubr. 0 10 20 30

Example 2 0.10 0.10 0.10 0.10

25 Example A 0.19 after about 2 minutes: >0.2

Example B 0.16 after about 5 minutes: >0.2

Also in this case, it can be concluded that the durability of the liquid of the invention is much better than that of 30 the aqueous lubricants of the prior art.

Example 4

For this example, experiments have been carried out to assess the effect of spillages on the slip value of a conveyor belt system.

5 In this connection, the slip value of bottles transported by a conveyor belt system is defined as the frictional resistance (in grams, as measured by e.g. a torsion meter coupled to a chart recorder) divided by the weight of said bottles. These bottles may for instance contain milk, beer
10 or other beverages.

The following test method was applied, using a conveyor belt test set-up including a conveyor belt, a motor to drive said belt, a torsion meter coupled to a chart recorder and
15 a device to keep bottles positioned on the belt at the same place.

The chart recorder is turned on and the torsion meter is calibrated with a 500 grams weight and a 700 grams weight. Subsequently, the conveyor belt is run with 8x 500 ml PET
20 bottles, whereby no water or lubricant is applied and consequently the belt is in the dry state. As a result, a base line for the belt running dry was obtained. A frictional resistance value of about 750 grams (i.e. outside the 500-700 gr range) was obtained. After about 5
25 minutes a water spray was turned on, such that during the entire remaining test period the track was being sprayed with water. This was done because in actual practice parts of the belt, particularly around the fillers- will always be wet . As a result a second base line was obtained on the

chart recorder for bottles running with just water, again showing a frictional resistance reading of about 750 grams. After a few minutes, one pipette full (3 ml) of the lubricant liquid composition of Example 3 was applied to the conveyor belt, which brought the chart reading of the frictional resistance down to within the 500-700 grams range. The belt was left running for another 5 minutes. Subsequently, 500 ml of the material to be spilled, was poured over the track, the effect of which with respect to the frictional resistance was registered on the chart recorder.

This procedure of applying the lubricant composition followed by the material to be spilled, was repeated for several types of spillage materials, i.e. soya milk, pepsicola, orange cordial, summer fruits cordial, and orange juice. In each case, 500 ml of the spillage material was applied.

To work out the slip value, the reading of the chart recorder for the frictional resistance (e.g. 600 gr) was divided by the weight of the bottles positioned on the belt. In fact, in each case the frictional resistance before spillage was 600 grams for 8x 500 ml bottles, resulting in a slip value before spillage of 0.15.

The following slip values were found.

	Type of spillage	slip value just after spillage	Comments
5	soya milk	0.1	within seconds, the slip value returns to 0.15
	pepsi cola	0.14	after 6 minutes, the slip value slip value returns to 0.15
	orange cordial	0.14	-
10	Summer fruits cordial	0.11	after 4 minutes the slip value returns to 0.15
	orange juice	0.12	after 4 minutes, the slip value returns to 0.15

The above results clearly showing that when applying a liquid composition of the present invention for producing a "dry" lubricant film, spillages donot cause a sharp rise in slip values and even lead to temporary reductions in slip values, are surprising and unexpected. Reason is that when applying aqueous conveyor belt lubricants of the prior art, spillages are well-known to cause an increase in frictional resistance values whereby the transported bottles will consequently fall over on the conveyor belt.

US-Claims

1. Use of a liquid composition suitable for producing a "dry" lubricant film (as defined herein) on a surface by discontinuous application of said composition, for lubricating a conveyor belt, said composition comprising at most 95% by weight of an aqueous phase and also being suitable for continuous application to a conveyor belt surface, with or without further dilution with water, to remove incidental spillages of extraneous material from the conveyor belt surface without loss of the required lubricity.

2. Use according to claim 1, wherein the conveyor belt is a single conveyor belt and wherein an amount of 2-20 ml of the liquid composition is fed every 20 minutes to said belt.

3. Use according to claim 1, wherein the liquid composition comprises a silicone oil and the aqueous phase.

4. Use according to claim 3, wherein the liquid composition comprises:

- (c) 10-95% by weight of the aqueous phase; and
- (d) 1-55% by weight of the silicone oil.

5. Use according to claim 1, wherein the liquid composition comprises an oil selected from vegetable oils, mineral oils and mixtures thereof.

6. Use according to claim 5, wherein the liquid composition additionally comprises the aqueous phase.

7. Use according to claim 5, wherein the liquid composition comprises:

- 10-90% by weight of the oil selected from vegetable oils, mineral oils and mixtures thereof; and
- 10-50% by weight of water.

8. Use according to claim 1, wherein the liquid composition comprises a polyhydric alcohol.

9. Use according to claim 8, wherein the polyhydric alcohol is selected from the group consisting of glycerine, propylene glycol, and ethylene glycol.

10. Use according to claim 8, wherein the polyhydric alcohol is present in the liquid composition at a concentration of at least 20% by weight.

11. Use according to any of claims 1, wherein the liquid composition includes an aqueous phase, and wherein polytetrafluoroethylene (PTFE) resin is present in said aqueous phase in the form of an ultrafine particle dispersion of the resin.

12. Use according to claim 11, wherein the PTFE constitutes 2-25% by weight of the liquid composition.

13. Use according to any of claim 1, wherein the liquid composition includes a surfactant material selected from the group consisting of anionic surfactants, nonionic surfactants, cationic surfactants, amphoteric surfactants, and mixtures thereof.

14. Use according to claim 13, wherein the surfactant material is present in the composition at a concentration of 0.1-10% by weight.

15. Use according to any of claims 1, wherein the liquid composition is applied onto the surface of a conveyor belt using a "flicker" non-contact applicator, containing

- a motor-driven rotating tubular brush which pick up said liquid composition from a sump via transfer rollers, and
- a steel plate mounted against the brush which flicks the bristles as the brush rotates, to generate a mist of droplets of liquid material directed onto the surface of the conveyor belt.

16. Method of lubricating a conveyor belt, comprising the steps of

(i) formulating a liquid composition suitable for producing a "dry" lubricant film (as defined herein) on a surface by discontinuous application of said composition, said composition comprising up to 95% by weight of an aqueous phase and also being suitable for continuous application to a conveyor belt surface, with or without further dilution with water, to remove incidental spillages of extraneous

material from the conveyor belt surface without loss of the required lubricity, and

(ii) applying said liquid composition to the conveyor belt as a thin "dry" lubricant film.

2025 RELEASE UNDER E.O. 14176

ABSTRACT

Use of a liquid composition for lubricating conveyor belts is provided, said liquid composition being suitable for producing a "dry" lubricant film on a surface by discontinuous application thereof, wherein the liquid composition can also be used for continuous application to a conveyor belt surface, with or without further dilution with water, to remove incidental spillages of extraneous material from the conveyor belt surface without loss of the required lubricity.

This liquid composition was found to exhibit remarkably good durability.

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY (Includes Reference to PCT International Applications)	Attorney Docket No. C7520(V)
--------------------------------------------------------------------------------------------------------------------------	---------------------------------

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

LUBRICANT COMPOSITION

the specification of which (check only one item below):

☒ is attached hereto.

☐ was filed as United States application Serial No. 09/ _____ on _____ and was amended on _____ (if applicable)

☐ was filed as PCT international application _____ on _____ and was amended under PCT Article 19 on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY (if PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 U.S.C. 119
Europe	99305796.7	22 July 1999	YES

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code §112. I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations §1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application.

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120.

U.S. APPLICATIONS		STATUS (CHECK ONE)		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED

PCT APPLICATIONS DESIGNATING THE U.S.				
PCT APPLICATION NO.	PCT FILING DATE	U.S SERIAL NUMBERS ASSIGNED (if any)		

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY (Includes Reference to PCT International Applications)	Case No. C 7520(V)
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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agents(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

CUSTOMER NUMBER: 000201

Direct all correspondence to: CUSTOMER NUMBER 000201

201

FULL NAME OF INVENTOR	FAMILY NAME CORBY	FIRST GIVEN NAME Michael	SECOND GIVEN NAME Peter
RESIDENCE AND CITIZENSHIP	CITY Annesley	STATE OR FOREIGN COUNTRY Nottinghamshire	COUNTRY OF CITIZENSHIP Great Britain
POST OFFICE ADDRESS	POST OFFICE ADDRESS Osier Drive, Sherwood Park	CITY Annesley	STATE & ZIP CODE/COUNTRY NG15 0DS United Kingdom

202

FULL NAME OF INVENTOR	FAMILY NAME DENTON	FIRST GIVEN NAME Jeffrey	SECOND GIVEN NAME
RESIDENCE & CITIZENSHIP	CITY Annesley	STATE OR FOREIGN COUNTRY Nottinghamshire	COUNTRY OF CITIZENSHIP Great Britain
POST OFFICE ADDRESS	POST OFFICE ADDRESS Osier Drive, Sherwood Park	CITY Annesley	STATE & ZIP CODE/COUNTRY NG15 0DS United Kingdom

203

FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
DATE	DATE	DATE